

## **ATTACHMENT 5: WORK PLAN**

### **Scope**

The Indian Wells Valley Cooperative Groundwater Management Group (Group) has received two previous LGA grants. The 2000/2001 grant was awarded to the Eastern Kern County Resources Conservation District on behalf of the Group and was used to survey wells used for groundwater monitoring, to develop a GIS management system to archive, track and present data, and to develop a website to allow public access to information. The grant funding was also used to develop a conceptual groundwater model based on existing groundwater information collected during earlier studies conducted throughout the Indian Wells Valley (IWV). The conceptual model and compiled information were documented in a final report titled “Groundwater Management in the Indian Wells Valley Basin” (June 2003).

In 2005/2006, the Indian Wells Valley Water District (IWWVD) obtained an LGA grant on behalf of the Group. At that time, the primary goals of the groundwater study was to refine the conceptual groundwater model and to evaluate the groundwater resource as a reliable, long-term source of potable water for the IWV. Study results would then be used to evaluate management practices, which may include treatment, and/or importation to maintain a reliable water supply. The objectives of the study were to install monitoring wells in areas where recharge may be occurring; to collect water quality samples and isotopic samples in new wells and in wells previously sampled; to interpret new data and compare new data to historical data to determine trends; to conduct continuous water level and water quality monitoring in the vicinity of extraction areas; to make recommendations for management strategies to assure a safe, reliable water supply to the IWV. The objectives of this AB303 grant were documented in a final report titled “Installation and Implementation of a Comprehensive Groundwater Monitoring Program for the Indian Wells Valley, California” (March 2008).

Utilizing the interpretational tools, datasets and monitoring programs either initiated or enhanced by the two previous grants, the Group is now applying for the latest round of LGA Grant funding to generate a baseline groundwater quality characterization of the Indian Wells Valley groundwater basin to be used as a basis for groundwater management, land use planning, fate/transport modeling, development of a Salt and Nutrient Management Plan and compliance with the State of California Irrigated Lands Management Program.

### **Purpose**

- Properly utilize the groundwater while minimizing changes to groundwater quality and groundwater chemistry.
- Develop a Salt and Nutrient Management Plan for the basin.
- Comply with the State of California Irrigated Lands Management Program.
- Develop a geochemical fate and transport model to work conjunctively with the groundwater flow model developed for the major IWV groundwater stakeholders (Indian Wells Valley Water District (IWWVD), Naval Air Weapons Station, China Lake (NAWS) and Searles Minerals, Inc.) by Brown and Caldwell, Inc. (January, 2009).

## Goals and Objectives

The goals and objectives of the groundwater study mimic the Purpose of the Indian Wells Valley Cooperative Groundwater Management Plan: "...to further develop, cooperatively or individually, the technical data and analytical capabilities to better understand the nature and characteristics of the watershed and aquifer system." The project also follows Planning Objective #6 of the Plan: "Continue cooperative efforts to develop information and data which contributes to further defining and better understanding the groundwater resource in the Indian Wells Valley" and "The Parties will continue to cooperate, to the fullest extent possible, in data gathering and analysis projects focusing on groundwater recharge, discharge, storage, quality, quantity, transmissivity, and storativity as it pertains to the groundwater resources of the Indian Wells Valley."

One of the primary goals of the groundwater study is to refine the conceptual groundwater model from a groundwater quality standpoint and to aid in the preservation of the groundwater resource as a reliable, long-term source of potable water for the IWV. Study results will then be used to evaluate management practices, which may include treatment, and/or importation to maintain a reliable water supply. Additionally, the findings of the study will be used in the development of a Salt and Nutrient Plan for the basin as well as use in compliance with the State of California Irrigated Lands Program. The objectives of this study are as follows:

- To archive in a relational database (KCWA) all available groundwater quality data (paper lab analyses from 400 wells).
- Develop a baseline evaluation of the groundwater quality of the basin by sampling approximately 200 wells spaced throughout the valley.
- Develop a groundwater quality monitoring program that will be designed using a representative sample of the 200 well group on an interval basis that will allow resource managers to track changes in groundwater quality in the future.

The Budget for this project is included as Attachment 6, and the Project Schedule, which is anticipated to begin in May 2013 and continue through April 2015, is included as Attachment 7.

## Tasks

1. Archival of all available groundwater quality data for IWV (approximately 400 wells). This task will be funded by the grant and overseen by KCWA who maintain groundwater quality and groundwater level data for the County of Kern.
2. Review and analysis of all relevant groundwater quality in a spatial (GIS) and temporal (time series) format by a qualified geochemist. Task 2 will be funded by the grant and performed by Dr. Randy Basset, Tetra Tech, Inc.
3. Develop groundwater quality trends over time using anion/cation ratios, metals concentrations from existing data along observed and predicted flow paths based on the results from the 2005/2006 LGA Grant study. Task 3 will be funded by the grant and performed by Dr. Randy Basset, Tetra Tech, Inc.
4. Develop and implement a groundwater quality monitoring grid of no more than 200 production wells (private domestic, municipal, or agricultural) throughout the

groundwater basin for analysis of general minerals and metals. Task 4 will be funded by the grant and performed by Dr. Randy Basset, Tetra Tech, Inc.

5. Sample and Lab Analysis of 200 well groundwater quality monitoring grid. Task 5 will be funded by the grant and performed by KCWA staff.
6. Use data from step 4 to designate a grid of select water production wells for a water quality monitoring program. The time interval for this monitoring program will be determined from this study. Task 6 will be funded by the grant and performed by Dr. Randy Basset, Tetra Tech, Inc. This future monitoring program will be funded by the Kern County Water Agency.
7. Develop the baseline characterization of the present day groundwater quality of the basin. Task 7 will be funded by the grant and performed by Dr. Randy Basset, Tetra Tech, Inc.
8. Designate areas of contamination and/or potable vs. non-potable waters to be used in future development of a Salt and Nutrient Management Plan. Task 8 will be funded by the grant and performed by Dr. Randy Basset, Tetra Tech, Inc.
9. Incorporate findings into implementation of the IWV Groundwater Management Plan (Attachment 3). Task 8 will be funded by in-kind services and performed by the Technical Advisory Committee (TAC) of the Group.
10. Quarterly Progress Reports. Task 10 will be performed by the TAC and funded by in-kind services Group and will be submitted to the California Department of Water Resources.
11. Final Report. Task 11 will be performed by the TAC and funded by in-kind services from the Group and Agency

## **Progress Evaluation**

Progress evaluation of all tasks will be performed by the TAC during their meetings which are 9:00 am on the third Thursday of every month. Quality assurance and quality control for all field sampling will be performed by KCWA staff one of whom is a California Registered Professional Geologist and one who is a California Certified Laboratory Technician. Analysis of data and interpretational products will be overseen by Dr. Randy Basset, Geochemist, Tetra Tech, Inc.

## **Project Deliverables**

### **Task 10: Quarterly Progress Reports**

The TAC will provide quarterly progress reports for submittal to California Department of Water Resources. These progress reports will also be presented at the Full Committee of the Group consisting of all the signatories of the Indian Wells Valley Cooperative Groundwater Management Group Memorandum of Understanding. This meeting is held 1:00 pm on the third Thursday of every Month at the Indian Wells Valley Water District, 500 West Ridgecrest Blvd, Ridgecrest, CA. These meetings are open to the public. Additionally, all progress reports will be published on the Group's website: [iwvgroundwater.org](http://iwvgroundwater.org).

### **Task 11: Final Report**

A final report will be prepared that describes the methodology of the field work, the quality assurance and quality control procedures used to validate the integrity of the data, and the interpretation of data by the TAC and consulting geochemist (Dr. Randy Bassett). Tables and

graphs of the collected data and maps as specified above will be included. The report will also include the results of Tasks 1 through 9 as listed above. This report will also be presented to the public.

### **Private Property Access**

The vast majority of the 200 water wells to be sampled will be on private property. The KCWA has been in charge of sampling water wells for water levels and water quality since 1989. The KCWA has developed a "Right of Entry Permit" form that is filled out and signed by each well owner that is part of the monitoring grid. Attached herein, you will find a blank copy of the Right of Entry Permit form.

### **Environmental Compliance**

The activities involved in this project do not qualify as a "Project" as defined under the California Environmental Quality Act, Section 21065.

"Project" means an activity which may cause either a direct physical change in the environment, and which is any of the following:

- a) An activity directly undertaken by any public agency.
- b) An activity undertaken by a person which is supported, in whole or in part, through contracts, grants, subsidies, loans, or other forms of assistance from one or more public agencies.
- c) An activity that involves the issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies."

The vast majority of the 200 water wells to be sampled are on private property. No alteration of existing lands or the environment will be performed nor will any chemicals be used on said properties either public or private. No environmental compliance documents will be required.